

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1. (currently amended) An inactive  $\text{Ca}^{2+}$ /calmodulin-dependent protein kinase II $\alpha$  (CaMKII $\alpha$ ) knockin nonhuman animal, wherein a CaMKII $\alpha$  gene of one or both of homologous chromosomes is substituted into an inactive type so that an inactive CaMKII $\alpha$  is expressed, wherein lysine corresponding to Lys-42 in the catalytic domain of mouse CaMKII $\alpha$  is substituted by arginine; and thereby a protein kinase activity of CaMKII $\alpha$  is specifically impaired while a calmodulin binding capacity of CaMKII $\alpha$  and a capacity of multimerizing subunits are maintained,

wherein the nucleus accumbens of the brain of the inactive CaMKII $\alpha$  knockin nonhuman animal has lower neuronal activity as compared to that of a wild-type, while there is no substantial difference in neuronal activities in the cerebral cortex and caudate-putamen as compared to those of the wild-type,

and wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is produced by a gene targeting method.

2-6. (canceled).

7. (currently amended) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 1 ~~or 2~~, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a rodent animal.

8. (previously presented) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 7, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a mouse.

9-25. (canceled)

26. (new) An inactive  $\text{Ca}^{2+}$ /calmodulin-dependent protein kinase II $\alpha$  (CaMKII $\alpha$ ) knockin nonhuman animal, wherein a CaMKII $\alpha$  gene of one or both of homologous chromosomes is substituted into an inactive type so that an inactive CaMKII $\alpha$  is expressed, wherein lysine corresponding to Lys-42 in the catalytic domain of mouse CaMKII $\alpha$  is substituted by arginine; and thereby a protein kinase activity of CaMKII $\alpha$  is specifically impaired while a calmodulin binding capacity of CaMKII $\alpha$  and a capacity of multimerizing subunits are maintained,

wherein the nucleus accumbens of the brain of the inactive CaMKII $\alpha$  knockin nonhuman animal has lower cytochrome oxidase activity as compared to that of a wild-type, while there is no substantial difference in cytochrome oxidase activities in the cerebral cortex and caudate-putamen as compared to those of the wild-type,

and wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is produced by a gene targeting method.

27. (new) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 26, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a rodent animal.

28. (new) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 27, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a mouse.